It's More Than Just the Beach!

Have you spent much time looking down at Earth from a plane or the Space Shuttle? You haven't? In that case, you may find it hard to believe that far more of our planet is under water than above water. And, unless you live in a submarine, you may not realize that the deepest parts of the ocean are far deeper than the highest mountains are high!

That's a lot of salt water!

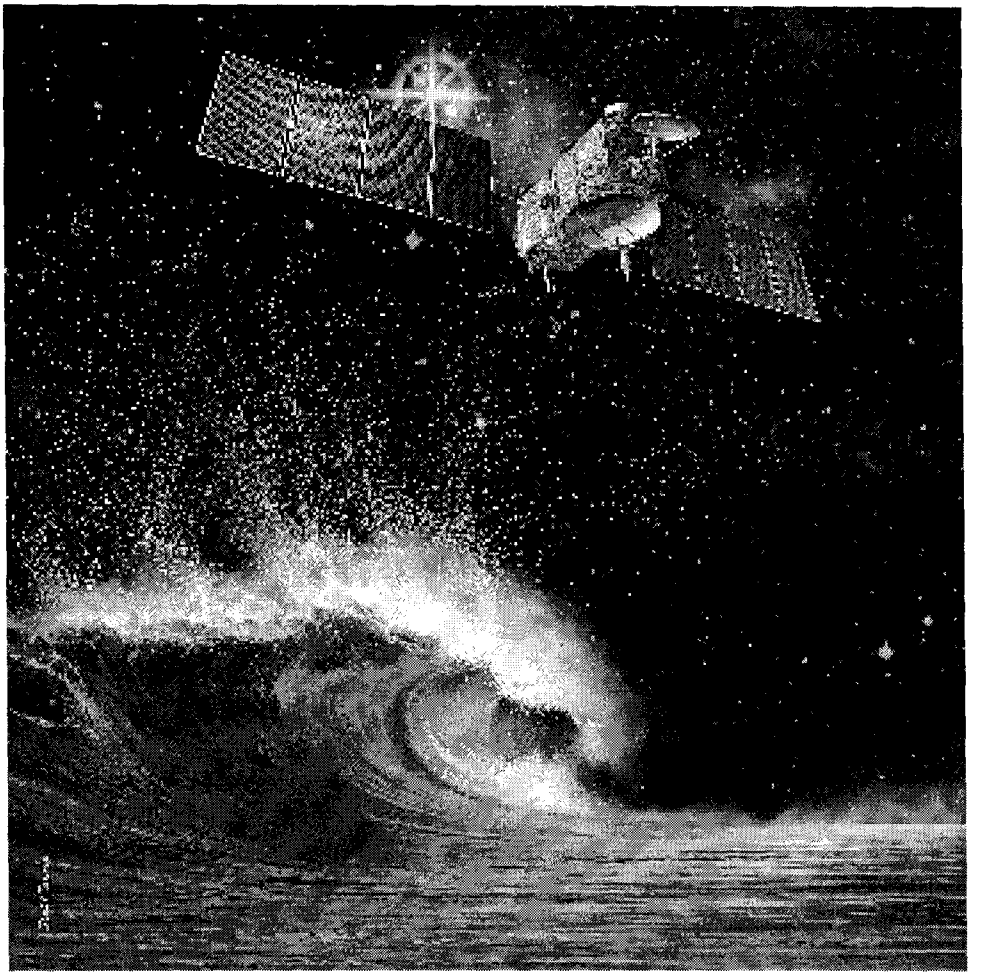
But it's a lot more than water. Besides all the plants and creatures, the oceans contain a huge amount of heat. The top 3 meters (about 10 feet) of the ocean contains as much heat energy as the whole atmosphere of Earth (which extends up hundreds of miles).

The water in the world's oceans isn't all the same temperature. In some places, like near Earth's equator, the water soaks up a lot of heat energy from the Sun. In other places, like near the North and South Poles, the water cools off, since not much direct sunlight reaches those places.

Since water flows easily, it moves all around the Earth, picking up heat in one place and carrying it to some other place. All this moving heat energy is mostly what causes weather. Thunderstorms, rain, snow, wind, hurricanes, droughts, hot weather, freezing weather-- in a very complicated way the oceans are in charge of them all. For example, "El Niño" is what we call the condition when a lot of warm water gathers in one place in the Pacific Ocean and causes unusual weather in many places all over the world.

To understand weather, we have to understand the oceans and how they move heat around the Earth. Jason-1 is a new Earth-orbiting spacecraft that will study the oceans. It will be launched early in 2001. It will continue and expand the measurements that have been done since 1992 by the Topex/Poseidon spacecraft. Both spacecraft use an altimeter (al-TIM-eter) to measure the height of the ocean surface. The higher the ocean's surface, the warmer the water. Jason-1's altimeter will be even more sensitive than Topex/Poseidon's.

The Space Place is a web site for children. To find out more about the oceans and El Niño and how to make some delicious El Niño pudding, visit The Space Place at http://spaceplace.jpl.nasa.gov/topex_make1.htm . This article was provided by NASA's Jet Propulsion Laboratory, managed by Caltech in Pasadena, California.



The new Jason-1 spacecraft will help us understand how oceans affect weather. Artist rendering provided by Centre Nationald'Etudes Spatiales (CNES).